

## **CLAIMS**

What is claimed is:

1. An exhaust muffler comprising:  
  
a housing having an exhaust passage; and  
  
a valve supported by said housing and arranged in said exhaust passage  
  
movable between multiple positions for tuning said muffler.
  
2. The exhaust muffler according to claim 1, comprising an electrical actuator supported by said housing actuating said valve between said multiple positions.
  
3. The exhaust muffler according to claim 2, wherein said housing includes a main housing portion and an actuator mounting pipe extending exteriorly away from said main housing portion, and an inlet pipe extending exteriorly away from said main housing portion proximate and generally parallel to said actuator mounting pipe.
  
4. The exhaust muffler according to claim 3, wherein a least one heat shield is arranged between said electrical actuator and said inlet pipe.
  
5. The exhaust muffler according to claim 2, wherein said exhaust passage includes a valve body supporting said valve with a shaft extending into said valve body and said valve secured to said shaft, said electrical actuator rotating said shaft between said multiple positions.

6. The exhaust muffler according to claim 5, wherein a rod is arranged transverse to said shaft, and said electrical actuator moving said rod generally linearly to rotate said shaft between said multiple positions.

7. The exhaust muffler according to claim 6, wherein said housing includes a stop limiting travel of at least one of said rod and said shaft.

8. The exhaust muffler according to claim 5, wherein said actuator mounting pipe extends into said main housing portion, and a first bearing arranged on said actuator mounting pipe supporting one end of said shaft and a second bearing arranged on said valve body supporting another end of said shaft.

9. The exhaust muffler according to claim 5, wherein said main housing portion includes baffles supporting an outer shell, with at least one of said baffles and said valve body including locating features providing a desired orientation between said at least one baffle and said valve body.

10. The exhaust muffler according to claim 1, wherein an exhaust gas flows through said exhaust passage, with substantially all of said exhaust gas flowing through said valve in each of said multiple positions.

11. The exhaust muffler according to claim 10, wherein said exhaust passage is in fluid communication with a tuning chamber and said tuning chamber is in fluid communication with an outlet pipe carrying exhaust gas from a main housing portion.

12. The exhaust muffler according to claim 1, comprising a position sensor detecting said multiple positions of said valve.

13. The exhaust muffler according to claim 1, comprising a return spring biasing said valve to one of said multiple positions.

14. A powertrain control system comprising:
- an engine including multiple cylinders;
- a controller selectively activating said multiple cylinder to provide a desired power displacement; and
- an exhaust system having a valve and an electrical actuator selectively electrically actuated by said controller between multiple position in response to said desired power displacement.
15. The powertrain control system according to claim 14, wherein said exhaust system includes a muffler supporting said valve and said electrical actuator.
16. The powertrain control system according to claim 14, wherein exhaust system includes a position sensor detecting said multiple positions of said valve, said position sensor connected to said controller.
17. The powertrain control system according to claim 16, wherein said controller determines a malfunction condition base upon information from said position sensor.
18. The powertrain control system according to claim 14, wherein a condition of return spring biases said valve to one of said multiple positions in a power loss said electrical actuator.